Le Conte's Thrasher (*Toxostoma lecontei*) Broadcast Survey Protocol

Photo credits: Christina Kondrat-Smith

Developed by

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RECOMMENDED CITATION

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Natural resource managers require information on sensitive, threatened and endangered species to make natural resource management planning compatible with sensitive species management. Standardized survey protocols are needed to obtain this information in a consistent and organized manner. As part of a larger study, the Arizona Game and Fish Department (AZGFD) developed a survey protocol to study the Le Conte's Thrasher [(*Toxostoma lecontei*) (LCTH)] on the Barry M. Goldwater Range East and West (BMGR). The following protocol describes a broadcast survey technique, contains background information, photos, and a survey form that will assist in conducting LCTH surveys. This protocol can be applied to other DoD installations (e.g., Naval Air Facility El Centro, Fort Irwin, China Lake and Twenty-nine Palms, CA) and surrounding land where the species may occur.

The Le Conte's Thrasher is an uncommon resident within the San Joaquin Valley, Kern River basin, Owens Valley, Mojave Desert, and the Lower Colorado River Valley subdivision of the Sonoran Desert in the southwestern United States and northwestern Mexico (Apendix 1; Sheppard 1996, Corman and Wise-Gervais 2005). Population decline is evident in some areas, primarily in the San Joaquin Valley of California (California Partners in Flight 2006, Coachella Valley Multi Species Habitat Conservation Plan 2007) and in Arizona near agriculture, urban and other human developments (Corman and Wise-Gervais 2005). This species is listed as a Bird of Conservation Concern by the U.S. Fish and Wildlife Service (USFWS 2008), and as a Species of Greatest Conservation Need by AZGFD (Latta et al. 1999, AGFD 2012) and the California Fish and Wildlife Department (Latta et al. 1999, California Partners in Flight 2006, CDFG 2007).

Description

The Le Conte's Thrasher is a gray-brown, medium-sized songbird with a long tail and decurved bill (Appendix 2). Total length and mass similar between sexes consisting of 24.0–28.0 cm and 54.5–75.5 g, respectively (Sheppard 1996). Adult thrashers have an unspotted breast, dark eyes, and pale undertail feathers that are buffy orange in color. This species can be distinguished from other thrashers by its unspotted breast in all ages, buff undertail-coverts, dark eye, lack of distinct supercilium, and dark tail contrasting sharply with pale body (Sheppard 1996).

Despite inhabiting very sparse landscapes, LCTH are difficult to detect as their plumage matches the soil surface and prefer running over flying (Appendix 3). LCTH typically forage on the ground beneath shrubs and trees, unless enticed to vocalize (e.g., by other territorial males or surveyors implementing broadcast calls). Their song is a long series of warbled, variable phrases with many slurred notes and the call is two-noted, with the second note higher in pitch (Sheppard 1996).

Habitat

The Lower Colorado River subdivision of the Sonoran Desert vegetative community typifies LCTH habitat in Arizona, and consists of extremely drought-tolerant plant communities consisting primarily of creosote bush (*Larrea tridentata*), saltbush (*Atriplex spp.*), bursage (*Ambrosia* spp.), paloverde (*Parkinsonia* spp.) and cacti (e.g., *Cylindropuntia* spp. and *Carnegiea gigantea*) (Brown 1994, Marshall et al. 2000).

Shrubs in LCTH habitat are usually well scattered with cover usually <15 m in any direction, and bare ground or with sparse patches of grasses and annuals (Sheppard 1996). The broad, flat and sparsely vegetated desert plains of LCTH habitat are dissected by numerous shallow braided washes and vegetation consisting of paloverde, ironwood (*Olneya tesota*), smoketree (*Psorothamnus spinosus*), catclaw acacia (*Acacia greggii*), mesquite (*Prosopis* spp.), ocotillo (*Fouquieria splendens*) and other shrubs. Washes are important to LCTH habitat selection as they provide movement corridors, foraging habitat, predator avoidance, and nesting (Sheppard 1996, Blackman and Diamond 2015).

Le Conte's Thrashers are less likely to be found as slope increases in proximity to desert mountain ranges (Fletcher 2009, Blackman et al. 2012, Blackman and Diamond 2015). Correspondingly, gravel content and tree density also increase with slope, landscape characteristics to which LCTH select against (Blackman et al. 2012, Blackman and Diamond 2015). Substrates in LCTH habitat are sandy and rarely composed of large proportions of rock (>2–4 cm diameter) or of deep silty clays (Sheppard 1996). In southwestern Arizona, high probability LCTH habitat was associated with Soils281 (Momoli-Denure-Carrizo), Soils282 (Why-Wellton-Gunsight-Growler-Denure), and Soils283 (Mohall-Denure-Coolidge); these Natural Resource Conservation Service soil types consist of sandy alluvium conducive to LCTH foraging (Blackman and Diamond 2015).

Nesting Ecology

The Le Conte's Thrasher nests in tall, robust shrubs or small trees that can support a nest approximately 66-71 cm (26-38 inches) above the ground (Appendix 4). Several tree species are important to LCTH nesting, including palo verde (*Parkinsonia* spp.), ironwood (*Olneya tesota*), and mesquite (*Prosopis* spp.) hummocks (clusters of mesquite tree 'islands' within a sparsely vegetated landscape). Other studies have documented nesting in large shrubs (e.g., creosote) and even abandoned buildings and vehicles (Sheppard 1970). LCTH nest-site selection may be more influenced by vegetation structure than plant taxonomy. The LCTH breeding season begins in late December and extends through early June; however, pairs remain together year-round. These thrashers average 2-3 nest attempts each year often successfully producing young from all three broods (Sheppard 1996, Corman and Wise-Gervais 2005). The eggs are incubated for 14-20 days by both parents, and the young fledge 14-18 days after hatching (Appendix 5).

Broadcast Surveys

General breeding bird surveys conducted May-August for most species may not be adequate to monitor the LCTH, however, data from the Arizona Breeding Bird Atlas observed nesting into May (Corman and Wise-Gervais 2005). Research conducted in 2009 on BMGR East and 2011 and 2012 on BMGR (East and West) and YPG used broadcast-response to survey for LCTH (Blackman et al., 2010, 2012, 2013). Blackman and Diamond (2015) estimated occupancy and detection probabilities for LCTH in southwestern Arizona for three consecutive years (2011-2013) to be 0.78 (SE $\pm$0.04) and 0.54 (SE $\pm$0.06), respectively. Modeling LCTH within the occupancy framework indicated imperfect detection (i.e., <1) on surveys demonstrating the general difficulty of

detecting this species, particularly late during the breeding season (Blackman and Diamond 2015). Based on these previous studies, we recommend and describe the following survey methodology.

The LCTH is most vocal during peak breeding (January-April). This window is when most individuals are observed and when surveys should be conducted. The male song is variable in volume and can be heard to approximately 750 m or more in calm, quiet conditions (Sheppard 1996). Surveys should begin 30 minutes after sunrise and be concluded within four hours. Surveys will be most effective when sustained winds are no more than Beaufort Scale 4 (20-28 km/hr), and when there is minimal to no rainfall. Surveys should be conducted using FOXPRO, Inc. game callers (e.g., NX3) or similar devices, with a volume between 1/3 and 1/2 of the loudest setting. The LCTH primary song and call files should be uploaded from Peterson Audio Field Guides, A Field Guide to Western Bird Songs, or a similar archive. Surveys include five points along one transect and five points along a second transect parallel to and 400 m south of the original transect (Figure 1). Each of the survey plots should be surveyed at least three times throughout the course of the season along the same transects implemented during the first survey pass.

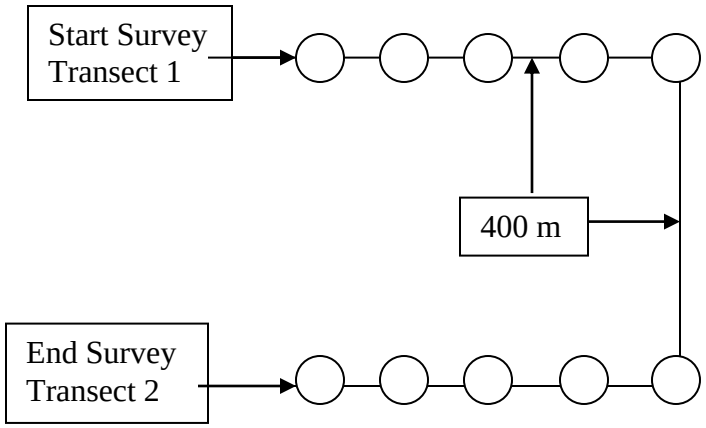

Figure 1. Schematic of parallel transects of call-broadcast survey points conducted by one surveyor. All points on each transect are 400 m apart. Transects are also 400 m apart.

At each broadcast station, spend one minute quietly looking and listening for LCTH. At the conclusion of the first minute, broadcast the recording of the primary LCTH song for 90 seconds. This should be done in a direction perpendicular to the transect line, and followed by a 2-minute period of observation. Following this observation period, broadcast for another 90 seconds in the direction opposite of the first broadcast direction and perpendicular to the transect line. This broadcast interval should also be followed by another 2 minutes of observation. If LCTH are detected, skip the next broadcast point to eliminate double counting individuals. If no LCTH are detected, total survey time at each point should be 8 minutes.

Document the location and tree/shrub species of the perch where each LCTH was first detected using the data form in Appendix 6. Perch locations should be recorded using a hand held global positioning system (GPS) using the North American Datum (NAD) 83 projected in the Universal Transverse Mercator (UTM) coordinate system. Additionally, record the date, plot number, survey area, observer, broadcast point number, observation time, distance to detection and behavior of all LCTH detected. If a nest is found or suspected, attempt to collect observation and behavior notes and location coordinates as near as possible, but without disturbing the nest.

Ensure data forms are complete, accurate, and legible. Deposit into a central repository in the field, and make copies when possible. A database should be created to store the survey results in a program such as Microsoft Excel or Access; data should be entered and cleaned as soon as possible to reduce transcription error and data loss. These database programs will facilitate data security, organization and analysis.

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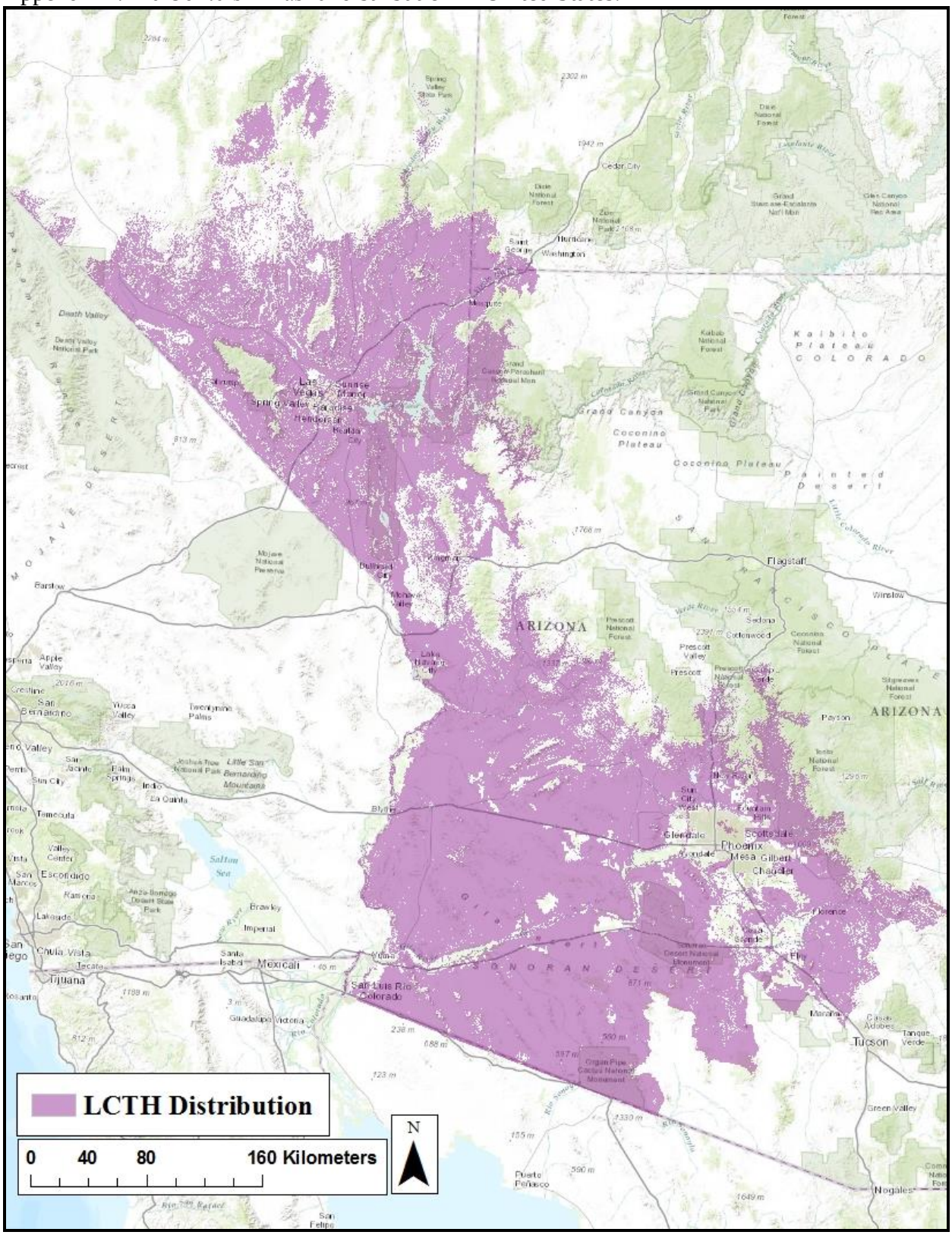
Appendix 1. Le Conte's Thrasher distribution in United States.



Appendix 2. Le Conte's Thrasher responding to broadcast survey.

Photo credits: Christina Kondrat-Smith

Appendix 3. Le Conte's Thrasher exhibiting elusive behavior.

Photo credits: Christina Kondrat-Smith

Appendix 4. Le Conte's Thrasher habitat in Arizona. This mesquite (*Prosopis velutina*) is a nest tree.

Appendix 5. Le Conte's Thrasher nest photographs.

Photo credits: Bruce Taubert

Appendix 6. Le Conte's Thrasher broadcast survey data form.

Le Conte's Thrasher Broadcast Survey Form

Plot Start UTM: **Plot ID:** **Survey Area #:** **Pass:** **Date:** **Observer:**

Point	Point UTM E (NAD83)	Point UTM N (NAD83)	Time	Species Detected	Count	Distance (m)	Perch or Nest Sp.	UTM E (NAD83) LCTH Location	UTM N (NAD83) LCTH Location

Comments: